

## Homework # 4

Economics 113

Professor Spearot

Winter 2009

Due Monday, February 23rd, in-class

Please report all regression output and commands.

Using Wage2.dta from the course website, please run the following regression.

$$\log(wage) = \beta_0 + \beta_{Educ}Educ + \beta_{Exper}Exper + \beta_{IQ}IQ + \beta_{Order}BrthOrd + u \quad (1)$$

Here,  $wage$  is the monthly wage,  $Educ$  is years of education,  $Exper$  is years of experience,  $IQ$  is IQ, and  $BrthOrd$  is the order of birth of the respondent (within their family).

- a. What is the  $R^2$  for this regression?
- b. Does IQ significantly affect wages? That is, can you conclude that  $\beta_{IQ}$  is significantly different from zero? Test this hypothesis at the 95% level.
- c. Please construct a 99% confidence interval for  $\beta_{Educ}$ . Please interpret your results.
- d. Suppose that I reject the hypothesis that  $\beta_{Order} = 0$  in favor of a two-sided alternative. What does this mean? What is the probability that I'm wrong? Interpret the result. Should we include  $BrthOrd$  in the regression?
- e. Suppose that I claim that the effect of a one year increase in education is the same as a one year increase in experience. Derive an equation to test this hypothesis, and estimate the new equation using stata. Am I correct?